Section: Surgery

Study of Colorectal Malignancy in Young Patients.

Arti Mitra[1], Unmed Chandak[1], Ankit Vyas[2], Rachit Mitra[3]

[1]Associate Professor, Department of Surgery, Government Medical College, Nagpur, India.
[2]Resident, Department of Surgery, Government Medical College, Nagpur, India.
[3]Intern, Indira Gandhi government medical college, Nagpur.

ABSTRACT

Background: Colorectal cancers are one of the leading causes of cancer related deaths worldwide. Its a common knowledge that the colorectal cancers usually occur in older age groups. This has led to low index of suspicion of having this malignancy in young patients who are less than 40 years of age. We conducted this study of colorectal cancers in young patient to emphasise the importance of keeping in entity in mind while dealing with the patient presenting with complaints consistent with colorectal malignancy even if there age is less than forty year. the stage at which the diagnosis is made is of crucial importance in colorectal malignancy and a delayed diagnosis can have serious consequences for the patient. **Objectives:** (1) To determine incidence of colorectal malignancy in young patient. (2) To study the symptom complex (3) To determine sex and site distribution (4) To determine operability and respectability of tumour in young patients (5) To study the histopathological types and grading in young patients. **Methods:** This study was a prospective cohort study of 42 cases of colorectal malignancy of age 40 years and below conducted in patients admitted in department of surgery at a tertiary care institute. The duration of study was 2 years. **Results:** In this study of colorectal cancers in young patient maximum number of patients were found in the age group of 31-40 years (69.4%) followed by in the age group of 21-30 years (28.57%)and 11-20 years (2.38 %). Males were found to be affected more (54.76%) than females (45.23%). Most common site of involvement was found to be rectum(57.14%) followed by rectosigmoid (16.66%) , caecum and descending colon (11.90%).Most common sign was found to be bleeding per rectum (69.04%) and most common symptom was found to be altered bowel habits (50%) followed by pain abdomen (59.52%). Mucinous adenocarcinoma (52.38%) was found to be most common histological type of colorectal malignancy followed by adenocarcinoma (42.85%). Most patients were diagnosed in Stage C (47.61%) of duke staging followed by stage B (23.80), stage D (19.04%) and stage A (9.52%). Metastasis were seen in 6 patients. 38 patients were operated. Most common surgical procedure done was abdominoperineal resection (11 patients) followed by Palliative sigmoid colostomy (10 patients), Right hemicolectomy (5 patients), anterior resection (5 patients), while left colectomy and palliative transverse colectomy was done in 3 patients each. Only 1 patient underwent total proctocolectomy with ileostomy. 4 patients were not operated as they had advanced stages of the disease.Adjuvant chemotherapypy and radiotherapy was given in all patients except in 2 patients who had favourable histological stage and was under follow up. Total 9 patients died during follow up period. 2 refused treatment and 31 patients are still under follow up. **Conclusion:** Our study was aimed at analysing colorectal malignancy in young patients. It should promote high index of suspicion on the part of treating surgeons about this entity even in young patients.

Keywords: Colorectal malignancy, young adults, high index of suspicion, prognosis.

INTRODUCTION

Colorectal carcinoma is the most common malignancy of the gastrointestinal tract.[1] It is one of the leading causes of cancer related deaths world wide.[2] There is an age dependant increase in incidence with each decade starting at the age of 40 years and before which it is rare particularly in young adults and adolescents.[3]

Name & Address of Corresponding Author
Dr. Ankit Vyas
Resident,
Department of Surgery,
Government Medical College,
Nagpur, India.

Although colorectal cancers occurs predominantly in older patients , it does affect younger adults with incidence varying between 2 and 23 %.[4] Interestingly the finding of colorectal carcinoma in an infant has been reported in literature.[5] The diagnosis of colorectal cancer is delayed for more than 1 year in more than half of adolescent as reviewed by steinberg and cowrkers. Peberton reported carcinoma in 9 year old child. he further observed that in children the colon is affected more frequently by cancer than any other parts of digestive system.[6] Inadequate screening and treatment due to low index of suspicion in young patients specially in familial adenomatous polyposis coli is one of the primary factors contributing to poorer prognosis in young patients.[7] Advanced stage at presentation, delay in diagnosis and poorly differentiated

carcinomas are some of the poor prognostic factors usually associated with carcinoma in younger age groups.[8] Some reports documented that young colorectal cancer patients had worse survival compared with the older counterparts.[9]

Thus it is important for surgeons to recognise the potential for colorectal cancer in young patients and to take an aggressive approach to the diagnosis and early treatment of the disease. The frequent failure to diagnose preoperatively the nature of the disease indicate the lack of awareness generally of this entity specially in young patients.

Low index of suspicion for colorectal malignancy in young patients along with poor prognosis in advanced stages makes it imperative that this entity must be considered in differential diagnosis even in young patients if they present with signs and symptoms consistent with colorectal carcinoma.[10] Given the importance of early diagnosis in this patient we conducted this study of colorectal malignancy in young patients of age less than 40 year.

MATERIALS AND METHODS

This study was a prospective cohort study of 42 cases of colorectal malignancy of age 40 years and below conducted in patients admitted in department of surgery at a tertiary care institute. The duration of study was 2 years. The study was approved by the Institutional ethical committee. Informed consent was taken before enrolling the patient in the study. 42 cases of colorectal malignancy meeting the criterion of the study were approached for the study. Diagnosis was confirmed by histopathological examination contributed by clinical, endoscopic and radiologic investigations. Preoperative evaluation was done with detailed clinical history. General examination was done in which contour of abdomen, presence of any visible lump, any visible bowel loops or veins over abdomen or presence of any scar was noted. Rest of the general and system examination was also carried out. Digital per rectal examination was done in all patients. If any growth was detected on per rectal examination then type, extent, consistency and fixity to adjacent structure, bleeding on touch and any associated pathology was noted. and further patient was evaluated by investigations like blood profile, ultrasound and CT-Scan. Special investigations like procto-sigmoidoscpy, colonoscop and barium enema was done in some patients depending upon the site of growth. With proper bowel preparation in elective operable cases patients were subjected to radical or palliativeve surgery whenever possible and exact staging of malignancy was done. As per the staging, the patients were advised to attend chemotherapy and were kept in follow up to determine the follow up.

Follow up was done by regular visits with estimation of serum CEA, X-ray chest, ultrasound and CT-Scan of the abdomen as required. Follow up done every 3 months interval for first year and every 6 months for the next year.

Each case was analysed as per age , sex, site of malignancy, type of malignancy, histopathological grade, stage of the disease, clinical presentation and the management protocol. All the data was collected and tabulated in mastersheet and and analysed. The study included 42 cases of colorectal malignancies in young patients (Age less than 40 years).

RESULTS & DISCUSSION

All patients were below 40 years as it was the inclusion criteria for the study and those more than 40 years of age were excluded from the study.
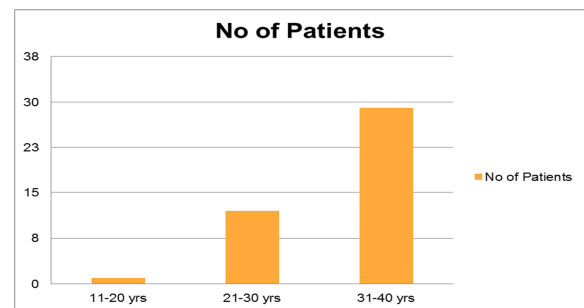

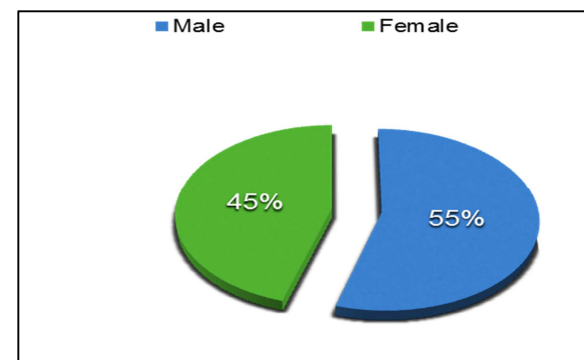**Figure 1: Age Distribution of studied cases**

Figure 2: Gender Distribution of studied cases

None of the patient was found to be less than 10 years of age. There was 1 patient between 11-20 years. 12 cases were between age group of 21-30 years. Maximum number of patients (29/42) were in the age group of 31-40 years [Figure1].

Out of the studied cases 23 (55%) patients were male and 19 (45%) were females [Figure 2].

The Most common site of malignancy observed in our study was rectum (57.14%) followed by sigmoid colon (16.66%), descending colon (11.90%) and caecum (11.90%). No cases were found of malignancy affecting transverse and ascending colon [Table 1].

1 patient had polyposis coli involving entire colon and colonoscopies biopsy revealed adenocarcinoma.

Table 1: Site distribution of malignancy in studied cases.

Site of Malignancy	Total No of Patients	Percentage
Rectum	24	57.14%
Sigmoid colon	7	16.66%
Descending Colon	5	11.90%
Transverse Colon	0	0
Ascending Colon	0	0
Caecum	5	11.90

Table 2: Presenting signs and symptoms in studied cases.

Complaints	Colorectal Malignancy
Bleeding per rectum	29
Altered bowel habits	21
Malena	8
Pain in abdomen	25
Features of intestinal obstruction	5
Lump in abdomen	1

Commonest symptom was bleeding per rectum which was present in 29/42 patients (69.04%) followed pain in abdomen and altered bowel habits which were seen in 25 (59.52%) and 21 (50%) patients respectively. Less common presenting complaints were malena (19.04%), features of intestinal obstruction (11.90%) and lump in abdomen (2.38%). Family history was present only in 1 patient who had familial adenomatous polyposis coli [Table 2].
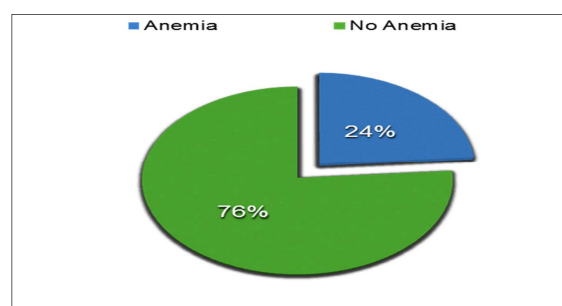

Figure 3: Haemoglobin status of the studied cases.

Haemoglobin was low in 10 patients suggestive of anemia [Figure 3]. while in 32 patients haemoglobin was normal.

All patients of carcinoma rectum (24/42) had palpable growth per rectally. Patients underwent investigations in the form of complete hemogram, random blood sugar, kidney function test, liver function test, Sr CEA estimation, FNAC/ biopsy, Xray chest and abdomen,Ultrasound,CT abdomen, colonoscopy and barium Enema.

Estimation of Sr-CEA was done in 29 patients preoperatively. Normal value was taken as < 2.5 ng/ml in non smokers and < 5 ng/ml in smokers. Sr CEA estimation was not done in 13 patients because either they presented in emergency or because of non-affordability of the patient. Post-operative Sr CEA estimation was done in 20 patients. Majority of them showed reduction in CEA values after resection and some of them later showed rising levels of CEA due to recurrence or metastasis. Follow up CEA of rest of the patient was not possible due to deaths during study period.

All patients were subjected to proctoscopic biopsy, colonoscopic biopsy or fine needle aspiration cytology and in those presented in emergency with obstruction open biopsy from growth was taken and the diagnosis of malignancy was confirmed on the basis of histopathology.

All patients were subjected to chest X-RAY and no patient revealed lung or bony metastasis on Xray chest. Similarly X-ray abdomen revealed features of obstruction in 5 patients while rest was normal.

All patients were subjected to ultrasound abdomen. Ultrasound features of colorectal carcinoma included circumferentiall bowel wall thickening in respective region of carcinoma. in some patients findings like enlargement of regional lymph nodes, ascites and locally advanced features such as infiltration and loss of fat planes between surrounding structures was noted.

Computerised tomographic scans were done in all patients except in those presented in emergency. CT scan confirmed the findings found in ultrasound. moreover it was more precise in detecting metastasis.

17 patients underwent preoperative colonoscopy, revealed no synchronous malignancy. 8 of them were having polypoidal growth in rectosigmoid region. One patient had polyps involving whole of the colon. 3 patients had growth in caecum and rest had growth only in rectum. Those patients presented in emergency were not subjected to this investigation.

Barium enema was done only in 4 patients out of which 1 patient revealed multiple polyps and rest revealed filling defects in rectosigmoid region.

Table: 3 Surgery done in studied cases.

Surgery performed	No of patients
Abdominoperineal resection (APR)	11
Anterior resection (AR)	5
Left hemicolectomy (LHC)	3
Right hemicolectomy (RHC)	5
Palliative sigmoid colostomy (SC)	10
Palliative transverse colostomy (TC)	3
Total proctocolectomy with ileostomy (TPCL-i)	1
inoperable	4
Total	42

All patients were treated according to standard treatment protocol. Total patients operated were 38 and 4 were not operated as these patients had advanced disease at presentation without signs of local advancement hence they were treated by chemotherapy [Table 3].
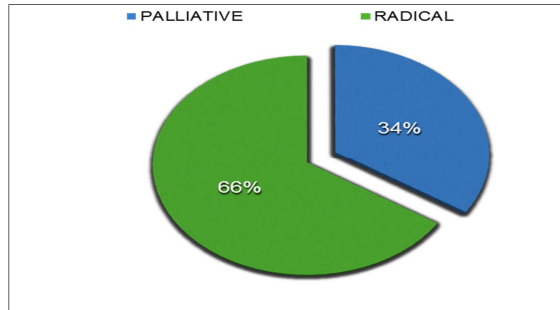

Figure 4: Radical and palliative surgery.

Out of 38 patients who were operated radical surgery was done in 25 (66%) while palliative surgery was done in 13 (34%) patients [Figure 4].

Out of 42 studied cases 25 (59.52%) patients were operable. Out of these 25 operable cases 3 patients had to be operated in emergency while in 22 patients elective surgery was done. 17 patients (40.47%) were found to be inoperable out of which 13 had undergone palliative surgical procedures like diverting colostomy.

Those patients who were found to be inoperable in elective settings 4 were having features of local advancement preoperatively with or without metastasis and hence were given treatment in the form of chemoradiotherapy and were kept in follow up out of which 1 patient expored and few of them showed local fixity of growth on exploration hence palliative diversion procedures were done.

Similarly in cases of emergency exploration out of 7 cases 3 were found to have resectable growth and 4 cases were having local fixity and irresectable and hence diversion procedures were done.

An analysis of outcome of management revealed that out of 42 patients 9 (21.42%) patient died during study period. 31(73.80%) patient were still recieving treatment and 5 (11.90%) patients presented in emergency with features of intestinal obstruction and underwent urgent explorationry laparotomy and were treated accordingly. 2 (4.76 %) patients declined further adjuvant therapy after surgery. There was no intraoperative mortality.

The analysis of staging of the patients revealed that majority of the patients ie 20 out of 42 presented in stage C followed by in stage B and D. Least cases presented in stage A (9.52 %) [Table 4].

The histopathological examination of the colorectal malignancy revealed that most common type of malignancy was mutinous adenocarcinoma which was seen in 22 (52.38%) patients followed by adenocarcinoma which was seen in 18 (42.85%) patients. Signet ring cell adenocarcinoma and

basaloid variant type of carcinoma was seen in 1 patient each [Table 5].

Commonest site of metastasis was found to be regional lymph nodes. 6 patients were found to be having metastasis in preoperative period.

9 patients died during follow up during study period. 1 of them died within few days of postoperative period while rest have died in the follow up study period. Post operatively total 13 patients had metastasis. 11 patients showed metastasis in liver after radical surgery was performed and 2 patients showed metastasis after palliative procedures in the follow up period. In metastatic disease group all patients showed metastasis to liver while 1 patient had metastasis to the abdominal wall which presented as umbilical nodule.

Total 9 patients died during follow up period and total 31 patients are still under follow up while 2 patients have declined continuation of any kind of treatment.

Table 4: Dukes Staging of the studied cases.

Dukes Stage	No of Patients	Percentage
A	4	9.52%
B	10	23.80%
C	20	47.61%
D	8	19.04%

Table 5: Histopathology of carcinoma in studied cases.

Type of Neoplasm	No of patients	Percentage
Adenocarcinoma	18	42.85%
Mucinous adenocarcinoma	22	52.38%
Signet ring cell Adenocarcinoma	1	2.38%
Basaloid variant	1	2.38%

DISCUSSION

Colorectal malignancies are one of the major cause of deaths due to malignancies worldwide. it is found to be cause of death in 9% of all cancer related deaths.[11] Its incidence is relatively more in developed countries like Australia, New Zealand, the United States and Europe. While India and china are considered to be low risk areas. In developed countries colorectal cancer happens to be within 5 most frequent cancers. Countries earlier thought to be having low incidence rates of colorectal cancers have started reporting increase in incidence rates. This increase is also shown to be influenced by improved diagnostic techniques and screening program.[12]

Like in most of the malignancies the incidence of colorectal cancer diagnosis increases as the age advances. Its incidence increases after the age of 40 and there is significant increase in the incidence of colorectal malignancies after 50 years of age.[13] Approximately 90% of colorectal malignancies occur in people in the age group of more than 50

years. However the incidence of colorectal cancers is increasing in younger population.[14] The colorectal cancers in young patients tends to be diagnosed late because of the low index of suspicion on the part of treating surgeon. Moreover it is also reported that colorectal cancers in young age are more aggressive, shows more venous and perineurial invasion. Bad histopathology and invasion characteristics are balanced by less post operative morbidity and mortality. Hence in young patient early diagnosis with a high index of suspicion can tilt the prognosis in favour of younger patients having colorectal malignancies.[15]

Absolute numbers of colorectal malignancies have similar rates for men and women. Gao RN reported rectal cancer to be the top subsite for men whereas right colon cancer was highest for women. Male to female ratios for incidence and surgeries was found to be highest for distal cancer and is reported to be increasing with time.[16]

Age, history of adenomatous polyps, history of colorectal cancers in family members and inherited genetic disorders like familial adenomatous polyposis (FAP) and hereditary nonpolyposis colorectal cancer (HNPCC) constitutes non modifiable risk factors for colorectal cancers.[17] Environmental factors , dietary habits, obesity, sedentary lifestyle and smoking are the most important modifiable risk factors for colorectal malignancies.[18] Diet strongly influences the risk of colorectal cancer, and changes in food habits might reduce risk of developing this cancer substantially. Diets high in animal fat is a major risk factor for colorectal cancer.[19] High meat consumption has also been implicated in the development of colorectal cancer.Meat consumption increases the risk of colon cancer more than rectal carcinoma.[20]

In our study we found rectum to be commonest site of colorectal malignancies. in other studies of colorectal malignancies rectum, ascending colon and descending colon were near about equally affected. It was moreover found that in women malignancy involving caecum was more common and a lower proportion of cancers located in the rectum.[21]

Most colorectal cancers are diagnosed after the onset of symptoms. The most common signs and symptoms associated with colorectal cancer includes rectal bleeding weight loss abdominal pain diarrhoea constipation abnormal rectal examination abdominal tenderness haemoglobin positive faecal occult bloods.[22] Earlier diagnosis of colorectal cancer is a crucial part of management of this malignancy specially in young age group in whom the diagnosis tends to be delayed to low index of suspicion. Delay in diagnosis directly affects the outcome in terms of morbidity and mortality.[23]

After physical examination complete hemogram, random blood sugar, kidney function test, liver function test, Sr CEA estimation, FNAC/ biopsy, Xray chest and abdomen,Ultrasound,CT abdomen,

colonoscopy and barium Enema or a combination of these investigations may be requires. Estimation of Sr-CEA is important in diagnsosis as well as to know the recurrence and metastasis of the colorectal malignancies.[24]

Colonoscopic or proctoscopic biopsy followed by histopathology is done to know the histological type of carcinoma. Histopathology of majority of colorectal malignancy reveals adenocarcinomas originating from epithelial cells of the colorectal mucosa.[25] Other rare types of colorectal carcinomas include squamous cell carcinoma , adenosquamous, spindle cell, signet ring cell adenocarcinoma, basaloid variant and undifferentiated carcinomas.[26] Initial staging of newly diagnosed colorectal cancer involves an assessment of local growth and determining whether there is distant metastasis. Since decades staging was based upon contrast-enhanced CT, with the addition of digital rectal examination (DRE) for tumour involving lower rectum. The introduction of new imaging modalities Transrectal ultrasound, MRI and PET-CT has improved the confidence with which staging of these malignancies can be done.[27] Dukes staging has been widespread in use for staging of these malignancies.[28]

Management of colorectal cancers depends upon factors like staging of the disease, histopathology, location of the growth, age of the patient, presence or absence of vascular and nerve invasion and presence or absence of distant metastasis. Primary colon cancers without systemic disease are treated mainly by surgery.[29] In emergency situations where obstruction, perforation or bleeding is present then segmental colectomy with focal diversion is done. Other procedures which is us ally done depending upon the condone of patients are abdominoperineal resection, anterior resection, left or right hemicolectomy depending upon the site of involvement, palliative transverse or sigmoid colostomy and Total proctocolectomy with ileostomy.[30]

The overall prognosis is better if an early diagnosis is made at localidez stage. The 5-year survival rate of localised stage disease is 90%. While for regional and metastatic stage the 5 year survival rate is 70% and 10% respectively. In general earlier the diagnosis is made better are the chances of survival.

CONCLUSION

The common knowledge about colorectal cancer occurring after 5th decade is responsible for overlooking the possibility of this entity in younger patient even when some of them present with classical features pointing towards the possibility of colorectal malignancy. Our study was aimed at analysing colorectal malignancy in young patients. It should promote high index of suspicion on the part

of treating surgeons about this entity even in young patients.

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